

**National EPA-Tribal Science Council (TSC)
Spring 2021 Virtual Science Meeting**

May 25–27, 2021

MEETING SUMMARY

Tuesday, May 25, 2021

Theme: Upholding and Protecting Tribal Lifeways

Gathering, Roll Call, Welcome and Opening Blessing

Neil Patterson, Jr., TSC Tribal Co-Chair, Tuscarora Nation, and Brenda Rashleigh, TSC Agency Co-Chair, Office of Research and Development (ORD), U.S. Environmental Protection Agency (EPA)

Neil Patterson and Brenda Rashleigh welcomed the participants, including tribal partners and EPA senior leadership. Neil welcomed Dana Adkins from Chickahominy Indian Tribe, who will serve as the TSC's initial Region 3 Tribal Representative. This marks the first TSC meeting with tribal representation from Region 3. Craig Kreman introduced Tammy Belone of the Pueblo of Jemez, who will serve as the Region 6 Alternate Tribal Representative.

Brenda hoped that the meeting would enhance and strengthen relationships between EPA and its tribal partners, educate EPA about tribes and tribal perspectives, and increase tribal engagement in EPA's science activities to address important challenges in environmental science. The specific goal of the meeting is to bring an understanding of tribal lifeways to risk assessment and management approaches. She reminded the participants to treat one another with respect and patience, seek to understand, and listen without interruption. The focus should be on positive, collaborative, solution-oriented discussions. Brenda also thanked the Agenda Development Team for developing a robust agenda.

Neil provided a traditional Haudenosaunee blessing in his Native language.

Welcome From ORD Senior Leaders

Chris Frey, Deputy Assistant Administrator for Science Policy, ORD, EPA, and Bruce Rodan, Associate Director for Science, ORD, EPA

Bruce Rodan thanked the TSC for the opportunity to speak and introduced Chris Frey, ORD's new Deputy Assistant Administrator for Science Policy. Chris expressed his eagerness to learn about the TSC and tribal issues, noting that the TSC's work is critical to the mutual goals of EPA and tribes. The TSC is an important venue for exchange of information and collaboration. One of the current administration's goals is to be respectful of tribal sovereignty and self-governance and engage in regular, meaningful, and robust engagement and consultation with tribes while recognizing the nation-to-nation relationship.

Chris thanked Neil and Brenda for their leadership and Monica Rodia for her support of the TSC. He acknowledged José Zambrana, Neil, and Brenda for their efforts to collect examples of Indigenous research protocols to assist non-Native scientists in conducting research with and in support of tribes. He also acknowledged the TSC's efforts, along with its tribal and EPA partners, on the systematic literature review of subsistence aquatic biota consumption to inform risk evaluations and assessments.

Chris reaffirmed that ORD understands the importance of obtaining tribal input on the office's current and future research. ORD is exploring opportunities for tribal engagement and consultation to inform its forthcoming Strategic Research Action Plans (StRAPs). EPA recognizes that specific tribal lifeways and interactions with air, land and water resources may alter tribal members' exposure and associated risk from environmental hazards and pollution. Chris' research background is in exposure and risk assessment, and he knows that understanding and recognizing the unique cultural aspects of activities that

bring tribal members into contact with contaminants, as well as including Indigenous knowledge and lived experience, is important in this effort.

Chris concluded by wishing everyone a productive meeting, noting that the most important action that he can take in his new role is to listen.

Bruce explained that for the next research planning cycle, ORD would like to conduct an improved tribal consultation much earlier in the StRAP process. ORD learned a great deal through its recent tribal listening workshops on wildfire research. If tribes are interested, ORD would like to obtain their input on the StRAPs through a direct engagement similar to a pilot held recently with state scientists in planning federal research. ORD views the TSC as a valuable intermediate advisor to provide the office with guidance on how to improve the StRAP consultation process.

Lon Kissinger explained that he has been working on a database in Region 10 focused on tribal environmental issues reported through EPA-Tribal Environmental Plans. Region 10 has been using the database for research planning purposes because it allows staff to search for tribal environmental issues that are compatible with EPA research interests. The database offers an alternate approach to identify tribal science research needs.

Region 1 Tribal Presentation

Billy Longfellow, Passamaquoddy Tribe of Pleasant Point

Billy Longfellow explained that the mission of the Passamaquoddy Tribe of Pleasant Point Sipayik Environmental Department is to preserve, protect, restore, and enhance all tribal lands, waters, air, and human health and to develop means to monitor and enforce tribal environmental policies. Passamaquoddy refers to the people who spear pollock, and Pleasant Point is the traditional seasonal fishing village of the Passamaquoddy tribe. The Passamaquoddy people have lived in their homeland for more than 10,000 years. Currently, the Passamaquoddy Tribe, which is part of the Wabanaki Confederacy, has approximately 3,600 members.

The community has substantial distrust of the local drinking water. Many community members drive 30 miles to purchase bottled water. This concern—combined with many discussions among tribal departments, tribal members, and other stakeholders—led to the establishment of a new community drinking water well near the newly built school. The well does not serve as a public drinking water source yet, but plans are in development. The tribe's air quality program monitors ozone, fine particulate matter and meteorological data. The tribe uses the Brownfields program to reassess and clean up tribal lands, including an old Wabanaki museum, gas station and campsite. These lands are being used again or have future plans for use. Native species and habitat restoration also is important to the tribe. During the last 8 years, the Sipayik Environmental Department has worked toward restoring the alewife and other native species populations, addressing water quality issues in tribal waters, and repurposing an inefficient fish ladder.

The tribe experienced many difficulties from COVID-19 and took the pandemic very seriously. The reservation was closed to all nonresidents except for delivery personnel, and these individuals were heavily vetted before being allowed to enter tribal lands. Staff were allowed to perform only the minimum activities needed to meet grant requirements and were unable to perform such activities as youth and community outreach. The reservation is reopening slowly.

Brenda asked about the tribe's most significant water quality concerns. Billy responded that trihalomethane levels in drinking water have exceeded historic levels for the past 4 to 5 years. Media coverage of the problem has prompted several entities to offer assistance. The color of local drinking water is an issue, and the water must be chemically monitored quarterly. The City of Eastport has similar water quality issues, which creates confusion about jurisdiction, and the Sipayik Environmental Department spends a good deal of time providing information to the general public. The department also

monitors tribal surface waters and wells on the tribe's blueberry lands and is redeveloping and modernizing its Clean Water Act Section 319 Nonpoint Source Program.

Shasta Gaughen asked about the traditional use for alewives. Billy responded that alewives are traditionally used in gardens to add nutrients back into the soil. They can be used as a food source, but they are not a preferred food source because of their abundant bones. The tribe considers alewives to be a keystone species.

Keynote Presentation: Reflections on What Indigenous Research Means

Kyle Whyte, George Willis Pack Professor of Environment and Sustainability, University of Michigan, and White House Environmental Justice Advisory Council

Kyle Whyte explained that much of his work is focused on conservation in the Great Lakes region, particularly native species (e.g., wild rice) restoration. He also chairs the Michigan Environmental Justice Coalition. He is a member of the White House Environmental Justice Advisory Council, which just released recommendations on such items as infrastructure, screening tools for climate and economic justice, and revisions of Executive Order 12898 (www.epa.gov/environmentaljustice/white-house-environmental-justice-advisory-council-final-recommendations).

The Indigenous research movement—and advocacy for Indigenous research—has a long history. Prior to First Contact and the formation of the United States, Native Americans were caring for natural resources and fostering a future for the generations to come. Such efforts would have been impossible to achieve without a knowledge system with rigorous checks and balances and reliable information. Tribes used dependable scientific knowledge that supported their health and governance for many generations before First Contact. Their systems included educational and research institutions and peer review. Colonialism and other circumstances of disempowerment weakened tribes' capacity to support, finance and engender their own education and knowledge systems.

By the 20th century, researchers began to consider Indigenous research and how to re-ground research in a way that comes from Native peoples and supports tribal communities. Organizing efforts around this issue included the First Inter-American Conference on Indian Life in 1940, at which Indigenous research, knowledge and environmental ethics were discussed. Similar grassroots efforts included the American Indian Historical Society in Northern California, which was established in the 1950s and published literature on Indigenous lands and protection of the environment. Territorial and regulatory efforts include the establishment of the Council of Energy Resource Tribes. Since the 1970s, substantial growth in the area of Indigenous research has occurred, including the establishment of tribal natural resource departments and agencies, tribal colleges and universities, and university programs and departments dedicated to Native studies. Another aspect of Indigenous research is the data collection undertaken by these organizations and entities. Kyle cited New Zealand's Māori Centre of Research Excellence as one example of an exemplary organization promoting Indigenous research in Indigenous communities.

Indigenous research is not separable from Indigenous sovereignty, which has political, ethical, data, education, mentorship, cultural, historical, social, and intergenerational dimensions. It is important to understand that Indigenous peoples define their own lifeways; these cannot be defined for them. Tribes know how their lifeways affect their political sovereignty and communities, including those members who live on and off of the reservation. Actual, intergenerational and aspirational lifeways often are intertwined, and it is important to know each lifeway when considering Indigenous research. Researchers must not make assumptions about the geography and jurisdiction in which a lifeway may be contained.

In addition to understanding how lifeways connect to research outcomes, it is critical to understand how lifeways connect to the research design and questions. Often in defining the research design and identifying the research questions, it becomes apparent that the existing body of information includes appropriate methods that the researchers can implement. Indigenous communities also must be involved

in the analysis, review and discussion processes. The peer-review process may be broadened beyond experts and include tribal participation. The dissemination process also is critical. Tribes must be included in each of these steps.

Craig commented that his tribe is beginning feasibility studies for the Superfund human health risk assessment process and examining tribal lifeways and use scenarios. He agreed that it is critical for tribes to include these aspects from the beginning. He is pleased with the establishment of the Tribal Lands Assistance Center through the Institute for Tribal Environmental Professionals (ITEP) and the knowledge that will be offered. Kyle agreed and noted that ITEP is an organization devoted to tribes that engages in overall Indigenous research.

Shasta explained that she and José are co-chairing a Region 9 workgroup that is developing a tribal research protocol framework for Region 9 tribes so that they can develop guidelines that protect tribal communities and their knowledge. Kyle agreed that it is important for tribes to have the capacity to perform their own research and work in addition to the need for federal and state agencies to be open to tribal research.

José explained that the TSC and its partners are working on an aquatic biota subsistence consumption systematic literature review and will be developing a report. The group has been discussing how to ensure Indigenous peer review. Kyle explained that it is possible with some journals to set up one's own peer-review process that includes appropriate checks and balances and describe the process in the submitted article. *AlterNative: An International Journal of Indigenous Peoples* requires the inclusion of at least one peer reviewer from the communities referenced in a research article. EPA also has fostered community-based peer review. Jim Lazorchak added that some journals allow authors to make recommendations regarding reviewers.

Through the chat feature, Dianne Barton commented that EPA recently announced its environmental justice consultations on the risk management rulemakings under the Toxic Substances Control Act (TSCA). She wondered how the White House has affected consultations for EPA and other agencies from an environmental justice standpoint.

Breakout Session: Exploring Tribal Lifeways to Inform Environmental Exposure Considerations

The TSC members and invited guests met in smaller breakout groups led by TSC members to discuss tribal lifeways by media (i.e., air, land, water). The Air Breakout Group was hosted by Katie Tiger and Amanda Kaufman and discussed such issues as woodsmoke, cultural burnings and PFAS air exposures. The Land Breakout Group was hosted by Craig and David Charters and discussed such topics as tribal agriculture and wild plants. The Water Breakout Group was hosted by Shasta and Mari Nord and discussed such matters as aquatic subsistence, wild rice and PFAS fish consumption.

Wednesday, May 26, 2021

Theme: Tribal Risk Assessment

Opening and Recap

Neil Patterson, Jr., TSC Tribal Co-Chair, Tuscarora Nation, and Brenda Rashleigh, TSC Agency Co-Chair, ORD, EPA

Neil and Brenda welcomed the TSC members and guests to the meeting and acknowledged Kyle's excellent keynote presentation the day before.

Welcome From the EPA American Indian Environmental Office (AIEO)

JoAnn Chase, Director, AIEO, Office of International and Tribal Affairs, EPA

JoAnn Chase explained that she was raised in the Mandan, Hidatsa and Arikara Community in North Dakota. This community means rejuvenation, love and family to her. She noted that the TSC's work is

essential and makes a difference, and she is grateful to return to the position that she held during the Obama Administration. JoAnn welcomed the TSC members to contact her with any questions or concerns.

The relationship between EPA and tribes has been compromised, and actions are being taken to re-establish this relationship. EPA is a leader among the federal family in collaborating with tribes, and EPA implements its tribal consultation with full recognition of the government-to-government relationship. EPA was the first federal agency to develop a vibrant, inclusive consultation policy that served as an example for other agencies. JoAnn recognizes, however, that implementation of the consultation policy can be improved. The Biden Administration immediately established the *Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships* on how federal policy can be more effective while strengthening the government-to-government relationship. EPA held two virtual national tribal listening sessions on EPA's *Plan for Improving Implementation of Executive Order 13175*.

JoAnn acknowledged that the Indian Environmental General Assistance Program (GAP) is essential for tribes. She inherited an in-progress GAP guidance revision process and has worked to maintain the integrity of the program and improve it for tribes. AIEO internally assessed the program in a transparent manner, addressing the GAP allocation issue. JoAnn promised that she would fulfill her responsibilities in a deep and meaningful way.

The White House Council on Native American Affairs has been revitalized, and EPA is leading the committees devoted to climate, natural resources, and treaty rights. EPA is committed to these issues. A sixth committee related to international issues is being established. Tribal issues, such as traditional ecological knowledge, also can be raised through the Commission for Environmental Cooperation.

Karen Hamernik asked whether some of the initiatives that JoAnn mentioned are described on AIEO's website. JoAnn responded that if individuals cannot find these activities on the website, they can contact her or Francine St. Denis for additional information. Many restrictions are being lifted, so AIEO is planning to be more transparent. Francine added that AIEO's priorities should be published on the website by end of the week.

Neil thanked JoAnn for her efforts and commented that he looks forward to TSC and AIEO collaborative efforts. JoAnn noted that solutions must not be limited by imposed borders.

Keynote Presentation: What Is "Valued" in Tribal Risk Assessment?

Jamie Donatuto, Swinomish Environmental Health Analyst, Swinomish Indian Tribal Community, and Larry Campbell, Tribal Elder and Swinomish Community Environmental Health Specialist, Swinomish Indian Tribal Community

Jamie Donatuto explained that the Swinomish Indian Tribal Community is located on a gateway island in the San Juan Islands of Washington state. The community is a salt and fresh water tribe that is surrounded mostly by water, with a large river crossing tribal lands. It is the only tribe in the lower 48 states that has all of these features. The tribe is connected intimately to all nonhuman species. Health is connected directly to culture, and culture is connected directly to location.

Jamie provided a brief overview of EPA's *Framework for Human Health Risk Assessment to Inform Decision Making*, which includes planning and scoping, problem formulation, and risk assessment steps to inform decisions. The four-step risk assessment process includes hazard identification, dose-response assessment, exposure assessment and risk characterization. Exposure essentially is an equation (i.e., numeric-based). Many discussions have occurred over the years about how to include tribally important factors of health, but this has proven challenging when a number cannot be assigned to these factors. Jamie has been working with Larry Campbell for a long time on how to broaden this piece and the risk assessment process in general.

Jamie showed photographs of the Swinomish salmon ceremony, which occurs at the beginning of each fishing season. Offerings are given to the four directions and to nonhuman relatives. Cedar, cabbage leaves, salmon, crabs, berries, and shrimp are significant to Salish communities.

Jamie and Larry have spent many years determining the best way to move forward with Swinomish Indigenous Health Indicators (IHI). It is difficult to assign a number to all of the important aspects of Indigenous health: self-determination, education (i.e., teachings in which knowledge is passed from elders to youth), resilience, cultural use, resource security and community connection. The IHI create a bridge between (1) the different ways of knowing and being and why these aspects of health are important to the tribe and (2) how to evaluate these aspects when they are at risk. Community members focus on the quality, access and safety of these aspects.

Tribal IHIs vary because each tribal community is unique, and each community has different terms and associated meanings. IHIs can be used in a variety of risk assessments as a parallel piece in the risk assessment process. Although IHIs cannot be fit into the numeric exposure equation, they can be used to inform risk assessments in an equitable manner.

Jamie showed photographs of development and flooding in the Swinomish community. So-called “100-year floods” are occurring approximately every 10 years. She highlighted an indigenized model of the Building Resilience Against Climate Effects (BRACE) Framework, called I-BRACE, that includes an additional step modified for community priorities. She provided an example of how I-BRACE works in the Swinomish community using clams, salmon and crab—which are of critical importance to the tribe—as proxies.

She displayed modeling data that was communicated to the community in way that was meaningful to them and not too scientific. This communication is important because community members have the relevant knowledge and should be driving priorities. The Swinomish researchers translated the modeling data graphs into an aerial-view image of a well-known location with the habitat of the three important proxy species; the community could understand and connect with this image. Community members immediately connected with the location, and learning that the habitat could be inundated with water and gone in 50 years was disconcerting to them. This is where stories enter; images can distill critical knowledge to communities. Larry reiterated that it is critical to speak to community members on their level and not use jargon. He urged researchers to understand how the community talks, thinks and communicates with one another and uses the English language. Funding and continuity also are critical.

The Swinomish researchers spoke to tribal youth, elders and members where they were at and asked for their stories and opinions. The community chose education as its top IHI. If knowledge is not passed from elders to youth, the rest of the IHIs do not matter. The community wants to develop a strong communication strategy to ensure that tribal knowledge is passed down through the generations.

Jamie cited the Two Row Wampum, which describes the parallel journeys of Europeans and Indigenous peoples and the Akwesasne tradition of the European vessel and the Indigenous canoe. Western human health risk assessments do not reflect tribal values. Western ways of knowing are not Indigenous ways of knowing, and this fact must be acknowledged. Indigenous knowledge cannot be integrated fully in Western science because Western science is the dominant paradigm and Indigenous knowledge does not have equity and weight. It is necessary to think of Western science and Indigenous knowledge as the vessel and the canoe, moving forward side-by-side, together in parallel. This is the concept on which Jamie and Larry developed the Swinomish IHIs, and this concept can be used in a variety of applications, including health risk assessments, toxic contamination, development projects and climate change mitigation.

Tribes across the country that Jamie has spoken to appreciate the IHIs and have developed community-specific IHIs that are reflective of their own values; however, no current regulations or policies exist that

allow the results of their particular evaluations that include their own health priorities to be used in decision-making. Tribes need to work together with federal and state agencies, academia, and other organizations on uplifting and promulgating Indigenous knowledge. Without this cooperation, the vision of parallel journeys cannot be realized. It is important for individual tribal communities to assess, evaluate and prioritize their own aspects of health and uplift them in a broader way outside of Indigenous communities. Larry echoed the importance of including tribal communities in all aspects of research, communicating to them in a meaningful way, and allowing them to drive the research and priorities.

Introduction to EPA's *Exposure Factors Handbook*

Beth Owens, ORD, EPA

Beth Owens explained that the vision of ORD's Health and Environmental Risk Assessment (HERA) National Research Program is to innovate and advance the science and practice of health and environmental risk assessment by developing a portfolio of fit-for-purpose assessment products and research. Two important science topics for the program are (1) science assessments and translation and (2) advancing the science and practice of risk assessment.

The *Exposure Factors Handbook* is a compendium of statistical data on human exposure factors, which are factors related to human behavior and characteristics that help determine an individual's exposure to an agent (i.e., these do not include chemical-specific data). The handbook is used to support environmentally sound risk management decisions and highlights areas in which data gaps exist and future research may be needed. The handbook not only promotes consistency across EPA but also is used nationally and internationally and serves as a model for other countries. Since 2017, EPA has been updating individual chapters depending on the availability of new data.

Information in the handbook has been summarized from studies documented in the scientific literature and other publicly available sources. Most of the data are derived from studies that target the general population or from a sample population from a specific area or group. With very few exceptions, the data presented are the analyses of the individual study authors. Studies are characterized as "key" or "relevant." Key studies are the most up-to-date and scientifically sound for deriving a recommendation, and relevant studies provide additional related information (e.g., older data to show trends). The handbook includes a short summary of each study in which the strengths and limitations of the study are discussed. Data are presented for various demographic variables where available. The included recommendations table is not legally binding, and the information should be interpreted as suggestions. The confidence ratings (i.e., low, medium, high) represent EPA judgment on the quality of the underlying data used to derive the recommendation.

Native American exposure-factors data are available for food consumption from an older general population survey (i.e., the U.S. Department of Agriculture's Continuing Survey of Food Intakes by Individuals), census data on life expectancy, and aquatic biota consumption. Available exposure-factors data specific to Native American populations are limited, and studies generally group Native Americans with other race/ethnic groups into an "other" category. For example, data on population mobility for Native Americans are grouped with Alaska Native, Asian Pacific Islander, and two or more races. Recommended values also are not provided in the handbook for Native American fish intake because data are limited to certain geographic areas and/or tribes and cannot be readily generalized to Native American tribes as a whole.

Other exposure-factor tools include EPA ExpoBox (www.epa.gov/expobox), *Child-Specific Exposure Scenarios Examples: Final Report* (cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=262211), ExpoFIRST (Exposure Factors Interactive Resource for Scenarios Tool; www.epa.gov/expobox/exposure-factors-interactive-resource-scenarios-tool-expofirst), and ExpoKids (www.epa.gov/expobox/expokids-data-visualization-tool-aggregate-exposure-lifestage-and-media).

Lon commented that, given that Native Americans have a strong sense of association with specific lands, assumptions about general population mobility for Native American populations should be reviewed carefully.

Neil spoke about aspirational lifeways, noting that quite often tribes are not reacting to current lifeway consumption and instead are thinking largely about where they want to be, which is more difficult to advocate for and predict based on current exposures. How do we think about trends for these exposures? Can general guidelines for reduction in exposures altogether be developed? Beth responded that the available tools help identify trends and speak to changes in behavior that would lead to changes in exposures. Lon added that the Stevens Treaties signed by Pacific Northwest tribes with the U.S. government guarantee tribal harvest and imply certain fish consumption rates. Currently, many of these consumption rates are not realized because of suppression (e.g., dams across streams blocking salmon habitat). He agreed that exposure assessment for Native Americans has an aspirational quality. Tribes would like to consume salmon at the same rates as before First Contact. What rate is chosen for exposure assessment in those circumstances? Some tribes have historic estimates and heritage rates based on anthropologic observation or caloric considerations. In some cases, habitats have changed irretrievably. Suppression, habitat quality and fears of chemical contamination all must be considered when establishing water quality standards. EPA's exposure assessments have challenges in determining aspirational exposures.

Breakout Session: Tribal and Ecological Risk Assessment and Management Approaches

Attendees met in smaller breakout groups hosted by TSC EPA Representatives and participated in a guided discussion on ecological and human issues related to one of the following topics:

- Hazard, toxicity and susceptibility assessment; *brief overview by Deborah Segal, ORD, EPA*
- Exposure assessments; *brief overview by Annette Guiseppi-Elie, Tim Buckley and Paul Price, ORD, EPA*
- Risk evaluation; *brief overview by Mike Metzger, Office of Chemical Safety and Pollution Prevention (OCSPP), EPA*
- Risk management; *brief overview by Jon Rauscher, Region 6, EPA*

This discussion was guided by the following questions:

- What aspects of this topic may need special consideration for tribal lifeways as related to land, air and water?
- What are the greatest unknowns for this topic?
- Are there key resources to connect with or develop?

Recap and Closing

Chris Taylor reported that the Risk Management Breakout Group discussed how risk management values are derived, particularly for cleanup and remediation. Tribes and Indigenous peoples often do not use natural resources in a manner similar to other populations. How can EPA better capture Indigenous use of and interaction with natural resources? This is not easy to assess, and it is important to get it right. Jon Rauscher added that tribes have important input in the development of preliminary remediation goals, which are used for feasibility studies and to identify cleanup alternatives. Tribal exposures can be more intense, so using established regional screening levels is not protective. The group discussed the feasibility of establishing tribal screening levels that could be somewhat applicable nationally.

Deborah Segal reported that the Hazard, Toxicity and Susceptibility Assessment Breakout Group discussed how hazards are identified, how dose-response is used to determine a reference (lifetime) value, and susceptibility factors that may make certain individuals more sensitive when exposed to toxicants. For example, methylmercury exposure through fish consumption is of concern for tribes, making risk

communication of fish consumption a critical activity for this population. Uncertainty factors are used to define the level at which effects may be seen and establish a standard that is protective of the population.

Amanda Hauff reported that the Risk Evaluation Breakout Group discussed risk evaluation in the context of pesticides. The group discussed available data, dietary exposures and dietary exposure assessment. EPA's Pesticide Program has data available for use in tribal risk assessments, and program staff are available to help tribes work on tribal risk assessment. The Pesticide Program is identifying scenarios and tribal exposure pathways based on subsistence lifestyles. The program is considering how to establish consumption patterns for fish, beans and other gathered foods that accurately represent Indigenous consumption; examining how to determine pesticide residues for model building; and determining other sources of exposure for tribes. OCSPP would like to engage with the TSC to address tribal risk assessment. Dianne noted the critical need for continued monitoring and collection of pesticide residue data in fish; perhaps this data gap can be addressed. Luke Hullinger commented that he is impressed with ongoing pesticide modeling efforts for various flora and fauna.

Lon reported that the Exposure Assessments Breakout Group discussed general aspects of exposure, including unique exposure pathways for Native Americans. The group heard about contaminant levels in anadromous fish in Maine and their exposure applications. The group discussed the need to consider unique lifeways (e.g., pottery-making, basket-weaving) and the unique exposures that stem from these lifeways, as well as aspirational exposures that could exist if tribes restore their traditional lifeways and resume historical consumption and activities. The environment must be regulated and remediated for safe resumption of these historical, traditional activities.

Neil recessed the meeting at 3:59 p.m.

Thursday, May 27, 2021

Theme: TSC Business

Caucus Sessions

The Tribal and EPA Caucuses met separately to discuss individual Caucus business.

Caucus Report Outs

Tribal Caucus

Neil reported that the Tribal Caucus had discussed the challenges of meeting virtually, especially for Indian country, and possibly meeting in person for the TSC's fall meeting. Another option is to meet virtually again in the fall and then in Spring 2022 honor the postponed invitation to meet at the Eastern Band of Cherokee Indians. Alternatively, Region 9 is meeting in Nevada in the fall, and the TSC could co-locate with this meeting, especially given the TSC's collaboration with Region 9 on Indigenous research frameworks and methodologies. EPA support of this collaboration is key. The Caucus also was happy for the opportunity get to know Dana better.

Two documents were shared—the TSC's 2006 *Paper on Tribal Issues Related to Tribal Traditional Lifeways, Risk Assessment, and Health and Well Being: Documenting What We've Heard* (nepis.epa.gov/Exe/ZyPURL.cgi?Dockkey=P1006LIF.TXT) and the National Tribal Toxic Council's (NTTC) 2015 *Understanding Tribal Exposures to Toxics* ([www.zendergroup.org/docs/NTTC-Understanding Tribal Exposures to Toxics-2015-06-19.pdf](https://www.zendergroup.org/docs/NTTC-Understanding_Tribal_Exposures_to_Toxics-2015-06-19.pdf)). The TSC may want to develop a white paper based on these documents to provide an update on actions tribes have taken since these documents were released. Craig added that these could help inform the efforts to include tribal lifeways and scenarios in EPA's *Exposure Factors Handbook*. Tribal inputs are critical to ensure that cleanup and restoration efforts are protective for tribes.

EPA Caucus

Brenda reported that the EPA Caucus had discussed the importance of understanding tribal issues and acting on tribal priorities. Assumptions exist at all steps of the risk assessment process, and risk assessors must determine whether these assumptions are appropriate and also proactively identify, improve and include tribal lifeways into risk assessments. The group also discussed how to use semiquantitative and semiquantitative scales in risk assessment and policies. EPA recognizes that all tribes are different, but it would be beneficial to explore whether some similarities exist that could be a starting point to help improve risk assessment for Native Americans. The Caucus discussed risk communication and use of visualization to communicate risk in tribal lifeways. It might be helpful to develop a workflow for the TSC to address these issues in a meaningful way.

TSC Updates

Tribal PFAS Working Group

Scott Walz reported that the working group has been participating in outreach activities. Irina Makarow, Washington State Department of Ecology, spoke to the group about the state's *Per- and Polyfluoroalkyl Substances Draft Chemical Action Plan* (apps.ecology.wa.gov/publications/documents/2004035.pdf). Working group members provided comments on the plan. Sophie Green, Minnesota Pollution Control Agency, presented to the group on the recently released *Minnesota's PFAS Blueprint* document (www.pca.state.mn.us/sites/default/files/p-gen1-22.pdf). Kaylene Ritter, Abt Associates, provided an overview of tribal PFAS case studies in Washington, Michigan, Oklahoma, and Alaska.

The working group also reviewed and provided comments on EPA's *Interim Guidance on Destroying and Disposing of Certain PFAS and PFAS-Containing Materials That Are Not Consumer Products* (www.epa.gov/pfas/interim-guidance-destroying-and-disposing-certain-pfas-and-pfas-containing-materials-are-not). The group did not have many positive comments about the document, although Scott did not elaborate on specific comments. Dianne can provide copies of the comments to interested TSC members. The working group also submitted a proposal to host a session at the Tribal Lands and Environment Forum.

The priorities for the upcoming year are to (1) identify tribes affected by PFAS, (2) develop a database and map of these tribes, (3) establish a PFAS Tribal Working Group webpage through ITEP to provide a clearinghouse for PFAS information, (4) identify funding opportunities for PFAS research, and (5) obtain more information on PFAS disposal to provide information and recommendations to tribes.

Aquatic Biota Subsistence Consumption Systematic Literature Review

Amina Wilkins provided background on the basis for this effort, including TSCA, which gave EPA the authority to collect data and assess chemical risk. The 2016 TSCA amendments called for improvements in the TSCA evaluation process, including using new risk-based standards to prioritize and address unreasonable risk to human health and the environment. OCSPP, NTTC, the TSC and the Tribal Pesticide Program Council partnered on a pilot case study to examine tribal exposure scenarios as part of the hexabromocyclododecane (commonly known as HBCD) chemical evaluation and identified the need to conduct a systematic review. The scope evolved from seafood consumption to aquatic biota consumption and includes seafood, shellfish, freshwater fish, and aquatic mammals and plants.

This effort is important because tribes have been requesting for decades that their specific subsistence consumption rates be included in EPA regulatory actions. This effort can inform EPA regulatory programs, including TSCA evaluations and water quality standards. For example, EPA and tribes in Region 10 have partnered to collect consumption data to develop state and tribal water quality standards and regional human health risk assessments.

Amina highlighted the EPA-Tribal Partnership Groups and their members who serve on the workgroup, as well as organizations connected to the workgroup and the roles they play. For example, the workgroup is collaborating with the Office of Land and Emergency Management's Human Health Regional Risk Assessors Forum Exposure Factors Workgroup to include exposure assessments related to Superfund sites and also participates in EPA Fish Forum calls.

The workgroup's definition of subsistence is based on foods that are harvested and/or sourced regionally such that consumption satisfies the majority of core needs, including caloric and protein intake. Amina noted that this is an environmental justice project. The project recently was included in EPA's HERA National Research Program Project 3.2.5.

The goals of this systematic review are to inventory the studies characterizing subsistence consumption to inform estimates of aquatic biota consumption rates, collaborate and utilize training opportunities to learn systematic review methods and tools, use established and accepted systematic review methods, summarize key studies meeting the inclusion criteria, extract consumption rate and other related data, and identify key data gaps and research needs. The end products will include a peer-reviewed co-authored EPA report that describes the group's methods and statistically summarized consumption rates; it is expected to be completed by Spring 2023. Other products include subsistence consumption rates to be included in the *Exposure Factors Handbook*, outreach and briefing materials, and evidence map visuals. Amina highlighted an example of a visual product.

The group has developed a Quality Assurance Project Plan, completed the literature search strategy, collected references from major databases, developed screening criteria and instructions, learned how to navigate the systematic review tools, completed screening of 50 percent of the title and abstract screens, and identified data extraction fields of interest. The group currently is screening references, collecting gray literature from nonmajor databases, performing tribal outreach, and documenting its efforts. Future work includes completing the full screening, extracting data, summarizing key references, preparing data for the *Exposure Factors Handbook*, and completing the EPA report and other outreach products.

Amina explained screening criteria "PECO statements," which describe four elements to include in reviews: population, exposure, comparator and outcome. She then provided examples of the methods that the group employed.

Laurie Alexander asked for advice about finding citations. Amina responded that it is necessary to consider sources of gray literature, such as ResearchGate and ProQuest. The group began exploring major databases and then moved to nonmajor database sources, checking references against those that already had been found. The group also is recording the number of references found in each database. Laurie noted the importance of finding out what people in individual communities know.

José explained that the EPA report will be co-authored by tribes, and the group would like to ensure tribal peer review. He noted the importance of listening and learning from one other. The effort has been a great success. Amina added that the group has overcome many barriers.

Region 9 RTOC Research Protocol Group

Shasta reported that the group has met a few times and is making progress; José has been a helpful partner. The group is developing a database and list of current work that will be useful for tribes. To support this, Leonard Bruce, Gila River Indian Community, has developed an Airtable, which is an online data-collection tool that is similar to a hybrid of Microsoft Excel and Access. All group members have access to the Airtable and are able to add links, documents and projects of interest. Approximately 20 documents currently are housed in the database.

Bill Tripp, Karuk Tribe, has developed a protocol with the University of California, Berkeley on how to establish a data and information agreement to protect his tribe. Although the protocol is specific to the

Karuk Tribe, some of the language can be used generally by tribes. The plan is to identify common language and important concepts in the protocol and include them in an outline of what tribes would like to see in Indigenous research frameworks.

Shasta noted that performing this work remotely creates barriers, and she is looking forward to meeting with the workgroup members in person during the Region 9 conference in Nevada in October. The group hopes that Dominique David-Chavez, Native Nations Institute, will be able to lead a workshop; her work is of tremendous importance, relevance and benefit to tribes. The goal is for attendees of the workshop to leave with lists of what is important specifically for them to develop a relevant framework and research agreements. Shana noted that cultural information must be protected as intensely as environmental and natural resources.

Tribal Waste and Response (TWAR) Steering Committee Priorities Document

Monica explained that she had sent the TWAR Priorities Document to the TSC members. She noted that PFAS is included as a priority in this document. Page Hingst or Mark Junker, TWAR Chair, will present more details at a future TSC meeting.

TSC Business

Monica is working on the next Task Order for TSC support and will explore options to meet either in person or virtually for the Fall 2021 meeting.

Neil asked about the workflow that the EPA Caucus had discussed during its meeting. José responded that ORD is investing in workflows, which sequence information that needs to be compiled to ensure that all information is collected. This method can be applied to the risk assessment and tribal lifeways effort to determine what must be considered: data, outreach, partners and so forth. Neil noted that the Tribal Caucus members had indicated that they do not have the capacity to undertake this effort as individuals, but they would like to work with other EPA-Tribal Partnership Groups, particularly the NTTC, to combine their strengths. The Tribal Caucus strongly believes that this is the type of work that EPA needs to be performing (e.g., developing models). Tribes determine their own lifeways, and this fact could be a valuable piece to the workflow. Brenda commented that the EPA Caucus could identify ideas and begin to develop a workflow and obtain Tribal Caucus input. It will be helpful to include EPA expertise on the *Exposure Factors Handbook* and risk assessment process.

José reminded the TSC members about the third symposium on Indigenous research being held at the Society of Environmental Toxicology and Chemistry North America 42nd Annual Meeting in November 2021 in Portland, Oregon. Abstracts for symposium presentations are due the week of May 31.

Monica recognized Chris and Lon for their service to the TSC. Lon and Chris will retire at the end of July. Monica also recognized José's service as the TSC's ORD Liaison. José extended his time as Co-Chair to provide stability during ORD's reorganization. Monica displayed the certificates of appreciation for Chris, Lon and José, noting José's leadership and guidance, Chris' desire to make a difference and eagerness to take action, and Lon's dedication to tribes and the respect that he has garnered among tribal communities and organizations.

Closing Remarks

Brenda thanked the participants for a productive meeting and closed the meeting at 3:37 p.m.

National EPA-Tribal Science Council (TSC) Spring 2021 Virtual Science Meeting Participants

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